

Wrong transistor on control amplifier PCB sometimes triggers a failure in the i-interrupt

For PGSTAT128N and PGSTAT302N (8 Series)

Symptoms: the symptoms for this problem are a possible failure of the current-interrupt measurements. The measured voltage is 0 V (see Figure 1).

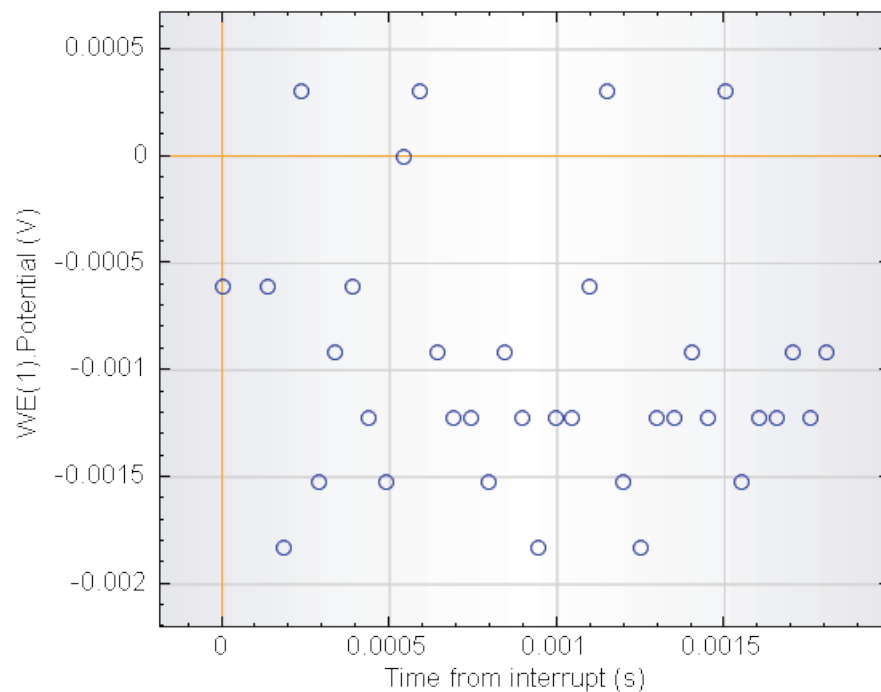


Figure 1 – Measured data on a 8 Series PGSTAT affected by the current-interrupt problem



Note

This problem only affects the Series 8 instruments with Serial numbers up to AUT85345. The PGSTAT100N and the 7 Series instruments are not affected by this issue.

Description: the instruments in this group are fitted with a wrong transistor for controlling the i-interrupt enable relay. The problem can be addressed by removing this transistor and replace it with a new type of transistor. The procedure is described in this document.

Recommended service action: Metrohm Autolab advises to systematically check all instruments received for service for this issue.

Component identification and location:

T7 on Control Amplifier PCB of PGSTAT128N (see Figure 3)

T21 on Control Amplifier PCB of PGSTAT302N (see Figure 5)

The following components are involved in the problem described in this document.

PGSTAT128N Wrong transistor **T7**: BC547B, proper transistor **T7**: BC337-40

PGSTAT302N Wrong transistor **T21**: BC547B, proper transistor **T21**: BC337-40

If a BC547B (see Figure 2) transistor is mounted on the Control Amplifier PCB, **remove it** from the PCB and replace it with a new transistor of type BC337-40 (see Figure 2). This transistor can be accessed without removing the control amplifier PCB. To reach the transistor, the Control amplifier PCB must be removed first (see Autolab Service Manual).

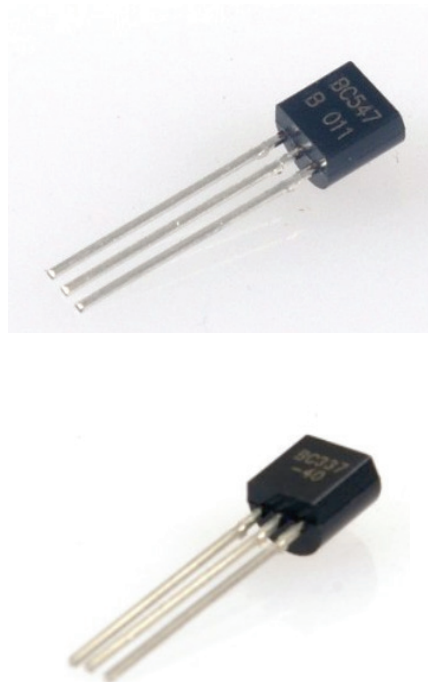


Figure 2 – The wrong transistor BC547B (top) and the correct transistor BC337-40 (bottom) are easy to identify by their printed code (the shape, coding and manufacturer can be slightly different then showed in this figure)

For the PGSTAT128N

The position of the transistor on the Control Amplifier PCB is shown in Figure 3.

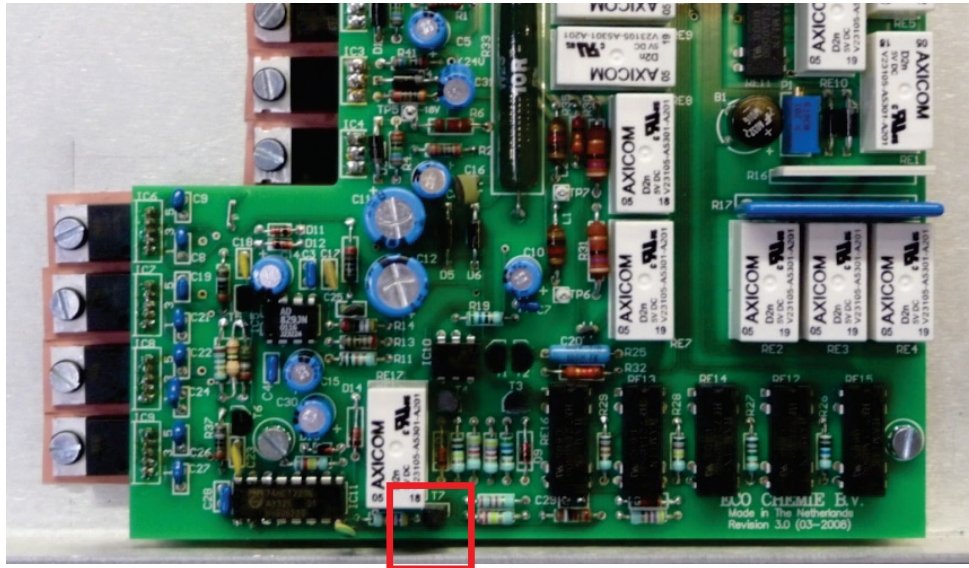


Figure 3 – T7 is located at the bottom of the Control Amplifier PCB

If the wrong transistor is located on the PCB, simply remove the resistor by cutting the three terminal pins as high as possible (see Figure 4). Alternatively, if the clearance is not enough, break the housing of the transistor and remove the pins.

After cutting away the housing remove the remaining pins and remove the soldering material from the holes.

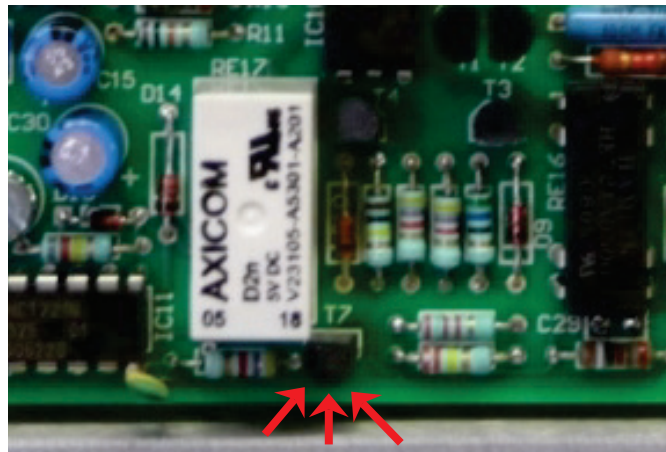


Figure 4 – Cut out the transistor from the PCB if the type is a BC547B

Cut the pins of the BC337 to length, insert and solder the three pins from the top.

For the PGSTAT302N

The position of the transistor on the Control Amplifier PCB is shown in Figure 5.

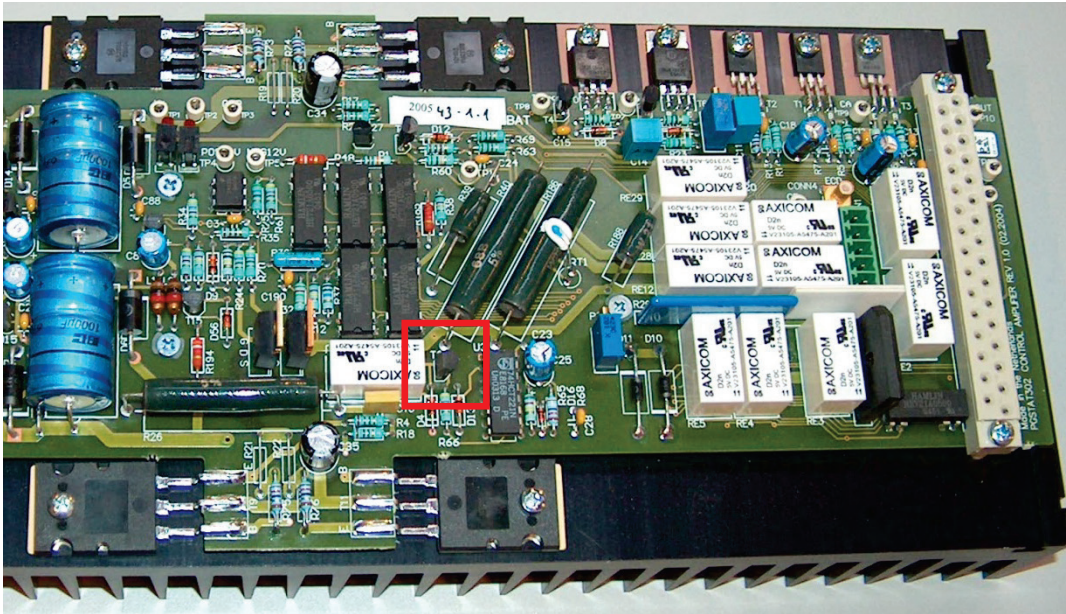


Figure 5 – T21 is located at the bottom of the Control Amplifier PCB

If the wrong transistor is located on the PCB, simply remove the resistor by cutting the three terminal pins as high as possible (see Figure 6). Alternatively, if the clearance is not enough, break the housing of the transistor and remove the pins.

After cutting away the housing remove the remaining pins and remove the soldering material from the holes.

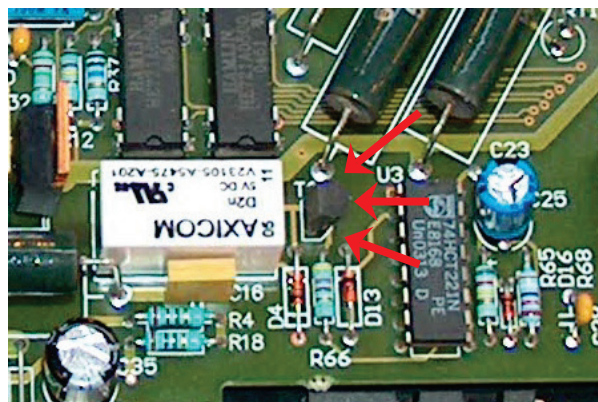


Figure 6 – Cut out the transistor from the PCB if the type is a BC547B

Cut the pins of the BC337 to length, insert and solder the three pins from the top.

Final verification: allow the instrument to warm up and run the TestCV procedure on the Autolab dummy cell. Then connect dummy cell C and test the i-interrupt circuit as explained below:

1. Start up NOVA, select Setup View and select the Procedures tab (see Figure 7).

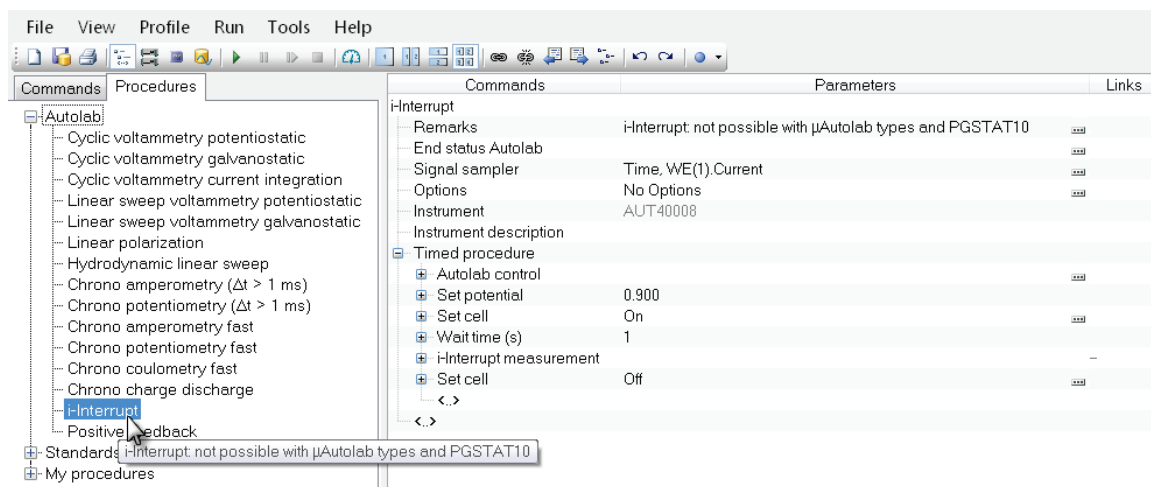


Figure 7 – NOVA i-Interrupt procedure

2. Load the i-Interrupt procedure and press the Start button. The result should be similar to Figure 8.

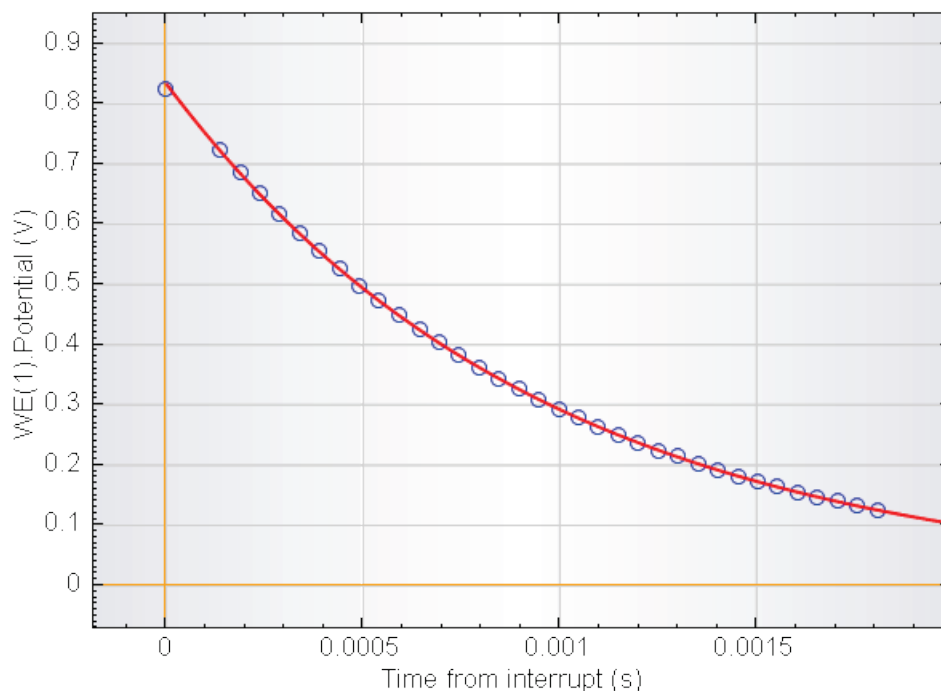


Figure 8 – NOVA i-Interrupt result on dummy cell C